QUASI–PERIODIC OUTBURST ACTIVITY OF NOVAE AT MINIMUM

M. Della Valle[1,2], M.Calvani[1]
[1]International School of Advanced Studies,Trieste
[2]Dipartimento di Astronomia, Università di Padova

Abstract

In this paper we present the statistical analysis of historical light curves of 8 old novae, performed through a Fourier analysis on $\sim$ 1600 no-equispaced (in the time) observations published by Steavenson between 1921 and 1953. The results seems to support the existence of a semiregular variability on typical timescales of $50^d \div 100^d$ and amplitude of $\sim 0.3 \pm 0.1$ magnitudes.

At present the largest body of data concerning the photometric behaviour of novae at minimum, is due to the pioneering works by Steavenson (1920→1950) and also to Robinson's compilation (1975) of 33 preeruption lightcurves of novae.

Besides testing the evolutionary models, such as the *Hibernation Scenario* (Shara et al. 1986), the importance of very long term observations of novae at minimum, has been recently pointed out by Bianchini (1987) and Warner (1988) in close connection to the possible detection of solar–type cycles of activity of the secondary. In spite of these considerations an interesting body of $\sim$ 1000 homogenous observations of 5 posteruption lightcurves provided by Steavenson between 1920 to 1950 (published on M.N.R.A.S) has been neglected and only recently recovered (Della Valle 1988).

The aim of our analysis is:

a) to verify possible presence of Dwarf Nova activity

b) to confirm on the basis of a larger sample of objects, the existence of semiregular variability as observed in Q Cyg 1876 (Shugarov 1983) and v841 Oph (Della Valle and Rosino 1987).

In this contribute we present only the preliminary results of our Fourier's analysis, performed by adopting the procedure suggested by Deeming (1975) to analyse data taken at unequally spaced time intervals, whereas a more complete analysis will be presented in a forthcoming paper.

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Fig.1a Folding of the 1920–1950 light curve of v841 Oph with the period given by Fourier analyses $\underline{P^d \simeq 51.5}$ (420 observations)
Fig.1b Folded data have been averaged over bins of 0.1P
Fig.2a Folding of the 1942–1961 light curve of IV Cep with the period given by Fourier analyses $\underline{P^d \simeq 275}$ (344 observations)
Fig.2b Folded data have been averaged over bins of 0.1P
Fig.3 Folding of the light curve of v446 Her 1960 $\underline{P^d \simeq 71.5}$ (43 observations)
Fig.4 Folding of the 1920–1950 light curve of Q Cyg 1876 with the period given by Fourier analyses $\underline{P^d \simeq 60}$ (620 observations)

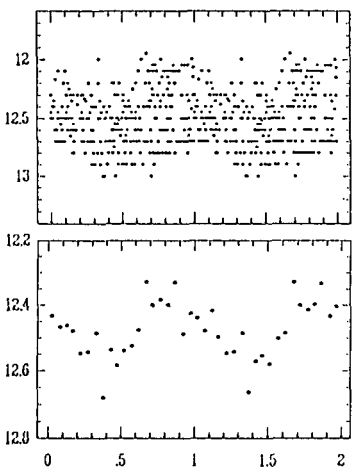

Fig. 1a, 1b

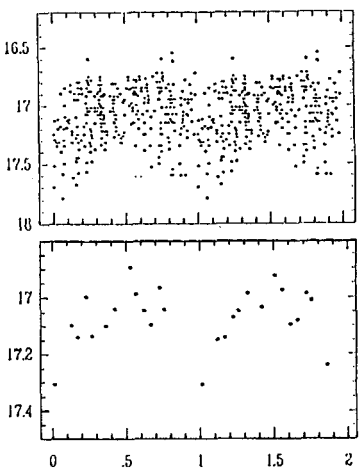

Fig. 2a, 2b

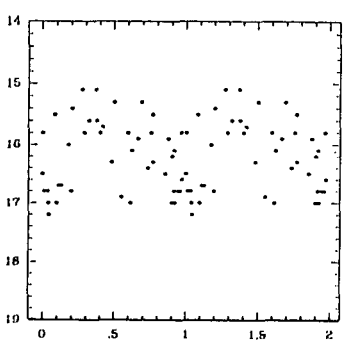

Fig. 3

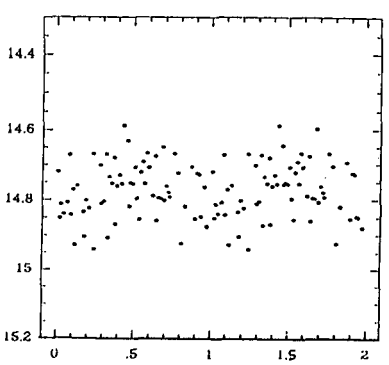

Fig. 4

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